Wei-Lin Chiang

Email: weichiang@berkeley.edu Webpage: infwinston.github.io

Education

Ph.D. in EECS, University of California, Berkeley *Aug. 2020 - present*

- AI and cloud system reserach at Sky Computing Lab
- Advisor: Prof. Ion Stoica

M.S. in Computer Science Dept., National Taiwan University *Feb. 2018 - Jul. 2020*

- Thesis: efficient algorithms for training deep and large graph convolutional networks
- Advisor: Prof. Chih-Jen Lin, GPA: 4.26/4.3

B.S. in Computer Science Dept., National Taiwan University *Sep. 2013 - Jan. 2018*

- Minor in Mathematics. GPA: 4.06/4.3 (major GPA: 4.17/4.3)

Research Interests

- AI systems, Cloud ML, Optimization for ML, and scalable/distributed ML algorithms
- Currently building SkyPilot system for easily and cost-effectively deploying ML workloads on any cloud

Publications

- Z. Yang and **W.-L. Chiang*** and S. Luan* and G. Mittal and M. Luo and I. Stoica. "Balsa: Learning a Query Optimizer Without Expert Demonstrations," **SIGMOD 2022**
- Y.-S. Li*, **W.-L. Chiang***, and C.-p. Lee. "Manifold Identification for Ultimately Communication Efficient Distributed Optimization," **ICML 2020**
- **W.-L. Chiang**, X. Liu, S. Si, Y. Li, S. Bengio, and C.-J. Hsieh. "Cluster-GCN: An Efficient Algorithm for Training Deep and Large Graph Convolutional Networks," **KDD 2019**
- C.-Y. Hsia, **W.-L. Chiang**, and C.-J. Lin. "Preconditioned Conjugate Gradient Methods in Truncated Newton Frameworks for Large-scale Linear Classification," **ACML 2018** (**Best Paper Award**)
- **W.-L. Chiang**, Y.-S. Li, C.-p. Lee, and C.-J. Lin. "Limited-memory Common-directions Method for Distributed L1-regularized Linear Classification," **SIAM SDM 2018**
- **W.-L. Chiang**, M.-C. Lee, and C.-J. Lin. "Parallel Dual Coordinate Descent Method for Large-scale Linear Classification in Multi-core Environments," **KDD 2016**
- M.-C. Lee, **W.-L. Chiang**, and C.-J. Lin. "Fast Matrix-vector Multiplications for Large-scale Logistic Regression on Shared-memory Systems," **ICDM 2015**

Research Projects

SkyPilot *Fall 2021 - present*

- An intercloud broker system for easily and cost-effectively deploying ML workloads on any cloud
- GitHub link: `https://github.com/skypilot-org/skypilot`

Graph learning on Ray *Spring 2021 - present*

- Distributed training of graph neural networks for billion-scale graphs

ML for query optimization *Spring 2021 - present*

- Balsa: a learned query optimizer without expert demonstrations
- Github link: `https://github.com/balsa-project/balsa`

Cluster-GCN *Spring 2019 - present*

- Main developer of an efficient algorithm for training large and deep GCN

- Link: `https://github.com/google-research/google-research/tree/master/cluster_gcn`

Distributed LIBLINEAR *Summer 2017 - present*

- One of the main developers of a distributed extension of a widely-used linear classification package
- The study is based on L1 regularized linear classification which published at SDM 2018
- Link: `https://www.csie.ntu.edu.tw/~cjlin/libsvmtools/distributed-liblinear/`

Multi-core LIBLINEAR *Spring 2015 - present*

- One of the main developers of a multi-core extension of a widely-used linear classification package
- The study on primal solvers is published at ICDM 2015; the one on dual solvers is published at KDD 2016
- Link: `https://www.csie.ntu.edu.tw/~cjlin/libsvmtools/multicore-liblinear/`

Work Experience

Intern@Amazon Product Graph, Seattle *May 2021 - Aug 2021*

- Proposed contrastive pre-training techniques for semi-structured data
- Few-shot learning with BERT on information extraction benchmark (SWDE)
- Mentors: Colin Lockard

Intern@Google Research, Mountain View *Dec 2018 - Mar 2019*

- Developed efficient algorithms for training large (million-scale) and deep GCN models
- Achieved state-of-the-art performance on several public datasets (PPI, reddit)
- Mentors: Prof. Cho-Jui Hsieh and Si Si

Intern@Alibaba Group, Hangzhou *July 2017 - Sept 2017*

- Developed distributed ML algorithms on Alibaba's parameter server (KunPeng)
- Reduced the training time (5% ~ 30%) of billion-scale models behind Ads and recommendation systems
- Mentors: Prof. Chih-Jen Lin and Wei Chu

Research Intern@Microsoft, Redmond *July 2016 - October 2016*

- Developing large-scale ML algorithms on Microsoft's distributed platform (REEF)
- Implemented Newton's method for solving billion-scale Ads CTR problems
- Mentors: Prof. Chih-Jen Lin and Sathiya Keerthi

Awards and Honors

- **Best Paper Award, ACML** *2018*
- **Bachelor Thesis Award, First Prize, National Taiwan University** *2017*
- **Innovative Undergraduate Research Award, Ministry of Science and Technology** *2017*
- **Undergraduate Research Award, First Prize, NTU CSIE** *2016*